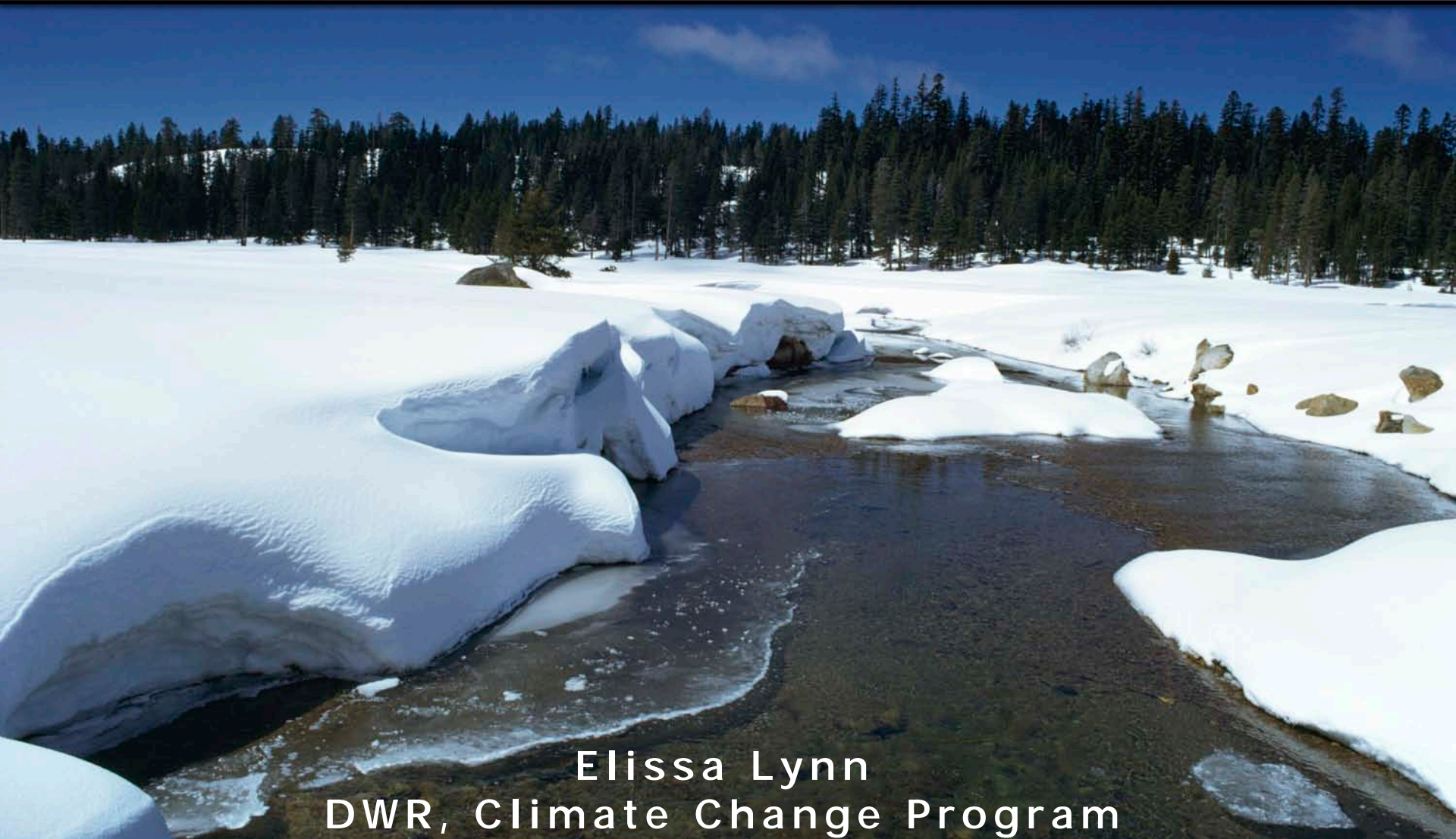




CLIMATE CHANGE

In the California Water Plan Update 2013



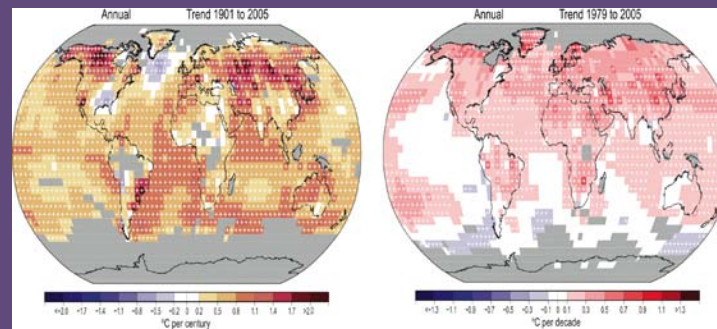
Elissa Lynn
DWR, Climate Change Program

Approaches to Incorporate Climate Change into CWP 2013

Project Manager: Elissa Lynn, elynn@water.ca.gov

DWR Climate Change Team and Achievements

Future Steps: Companion Work and Plans



Climate Quiz!

How many inches of Sea Level Rise have been measured along the CA coast in the past 100 years?

- A. None
- B. 2 inches
- C. 4 inches
- D. 7 inches

Climate Quiz!

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Climate Quiz!

How much of a reduction in Sierra Nevada snowpack has been measured by DWR in the past 100 years?

- A. It has actually increased 10%
- B. 1 – 2 %
- C. 5 %
- D. 10%

Climate Quiz!

How much of a reduction in Sierra Nevada snowpack has been measured by DWR in the past 100 years?

A. It has actually increased 10%

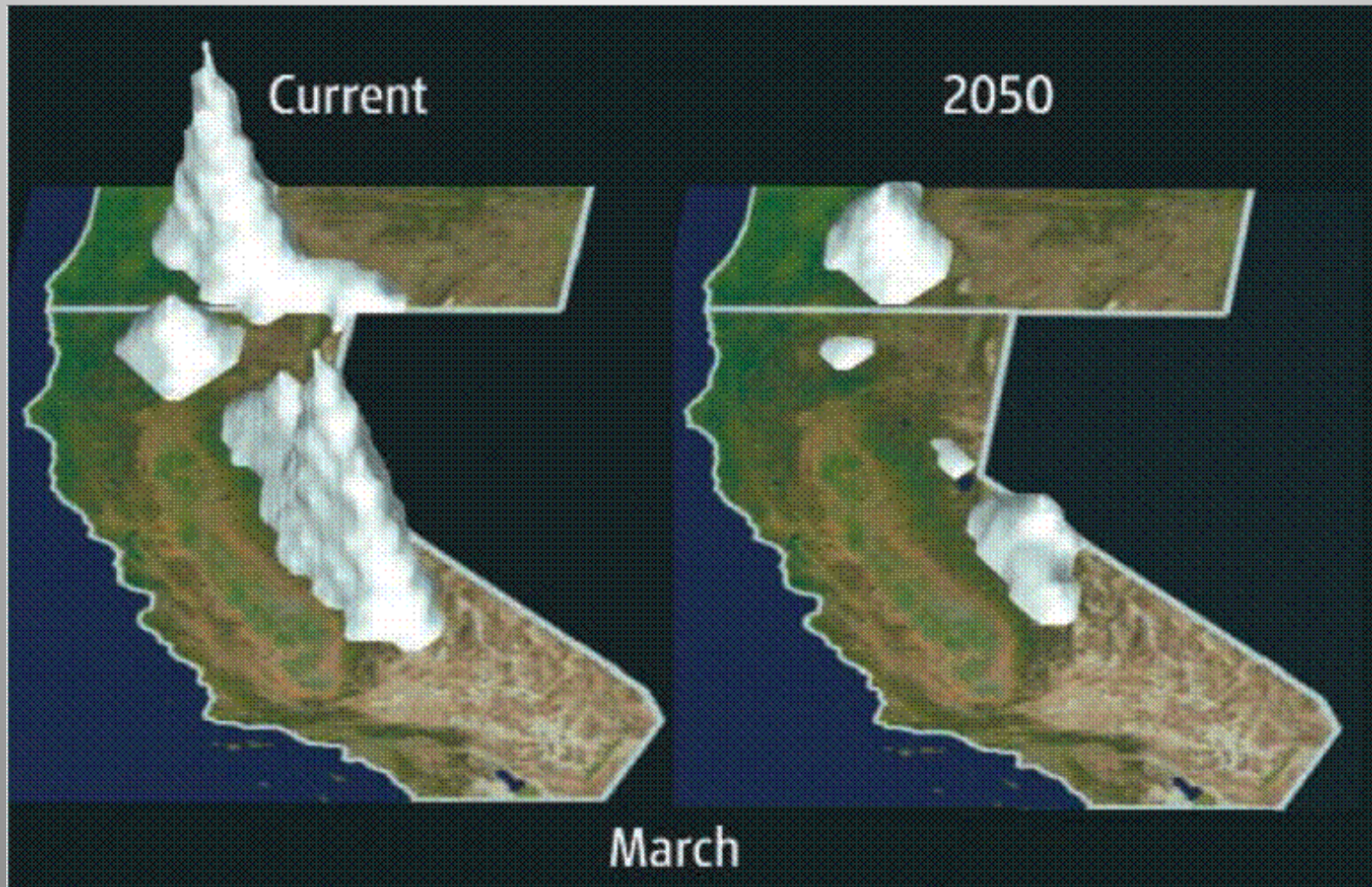
B. 1 – 2 %

C. 5 %

D. 10%

Loss of 1.5 million acre-feet of snowpack storage

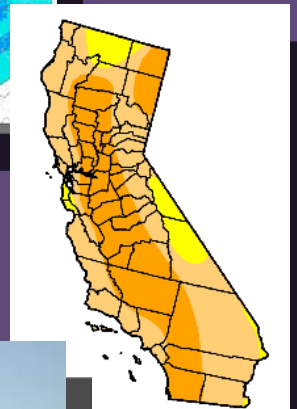
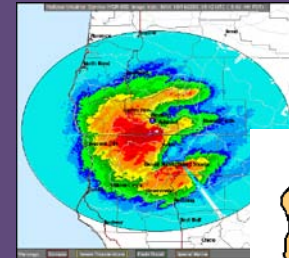
Snowpack Reduction

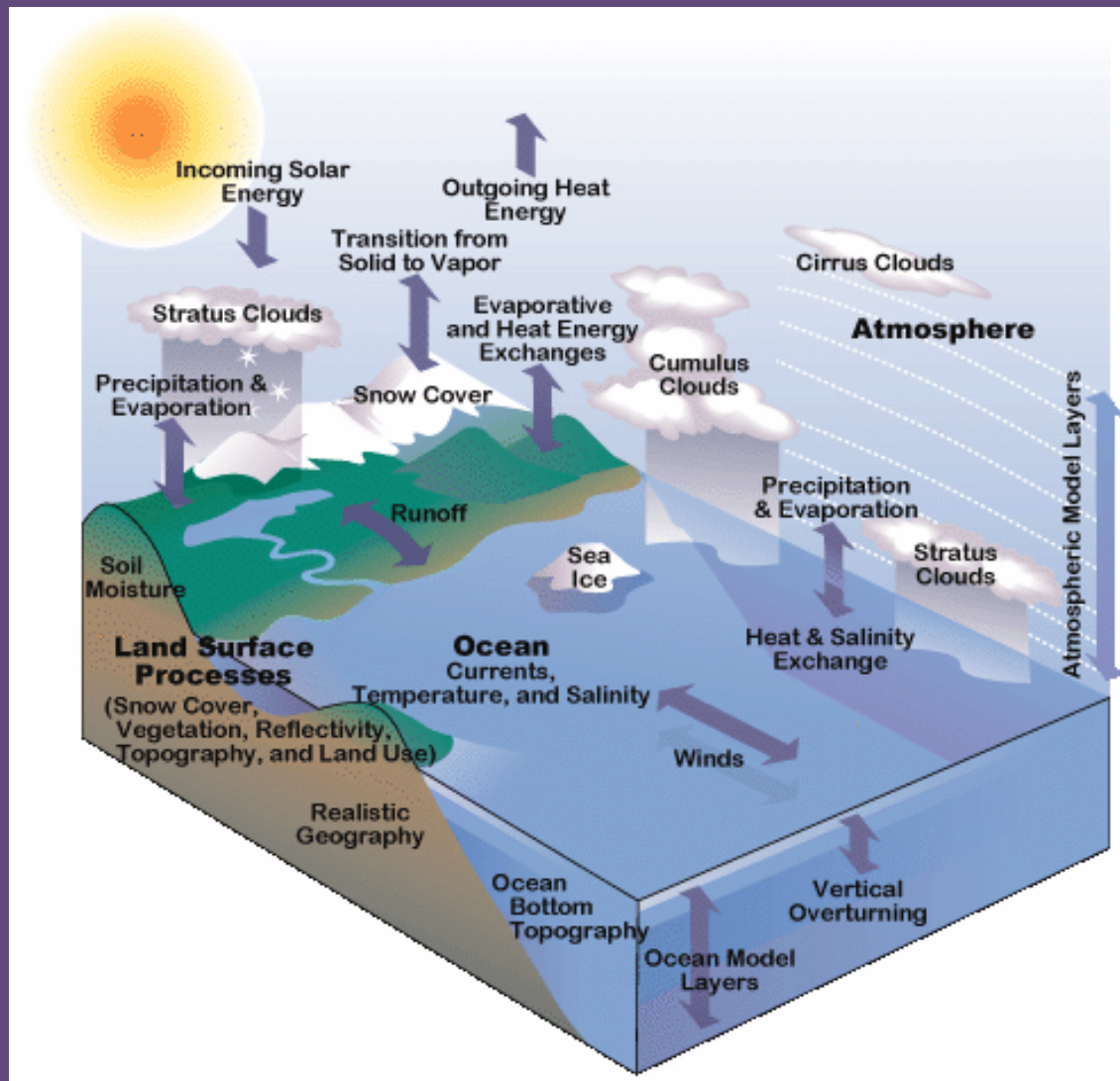


Source: Scripps Institute of Oceanography

In the Next 40 years....

- 3.5 – 11° F temp rise
- 25 – 40 % less snowpack
- More intense wet and dry periods
- Higher flood peaks
- Less summer runoff
- Sea Level rise: 4–16" (7–55" by end of century)
- Increased salinity in the Delta





**Adaptation
and
Mitigation
Both
Necessary**

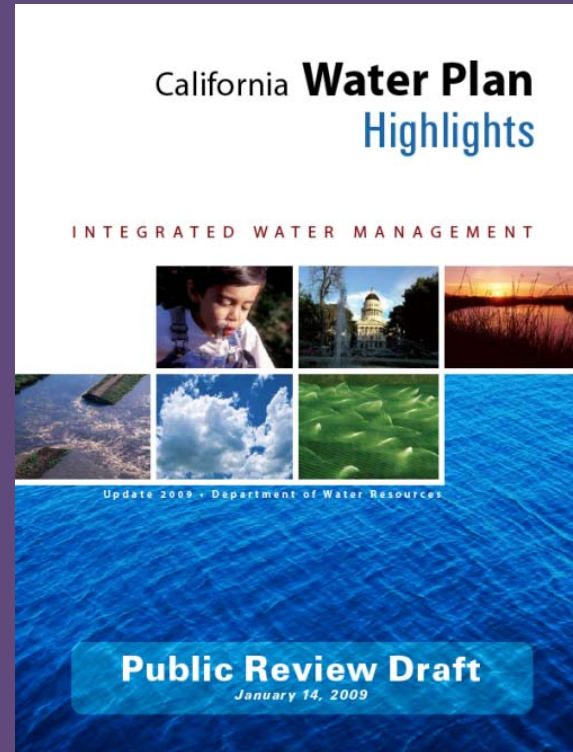
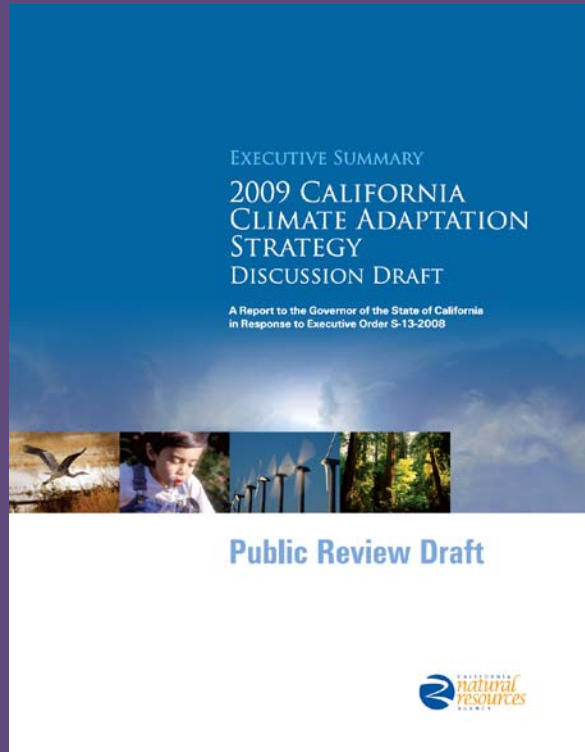
Adaptation and Mitigation Both Necessary

Adaptation

Actions that adjust to changes in hydrology
(respond to rising sea levels when building levees)

Mitigation

Actions that reduce or eliminate impacts
(reduce emissions of CO₂ from construction to reduce contribution to global warming)



www.climatechange.gov/adaptation

www.waterplan.water.ca.gov

Comprehensive Strategy for Adaptation

Regional Strategies

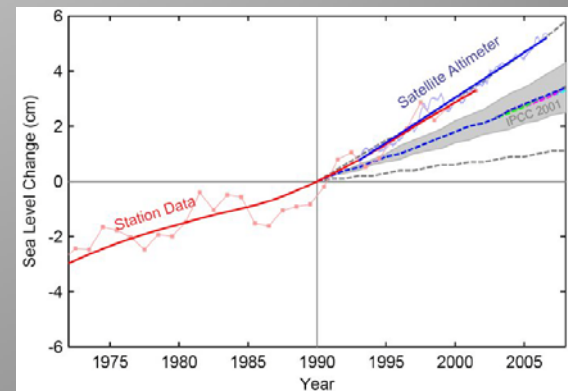
- ❖ Fully implement Integrated Regional Water Management (IRWM)
- ❖ Aggressively increase water use efficiency



Comprehensive Strategy for Adaptation

Improving Management and Decision-Making Capacity

- ❖ Preserve, upgrade, and increase monitoring and data analysis and management
- ❖ Plan for and adapt to sea level rise
- ❖ Identify and fund focused climate change impacts and adaptation research and analysis



Comprehensive Strategy for Adaptation

Investment Strategies

- ❖ Provide sustainable funding for statewide and integrated regional water management

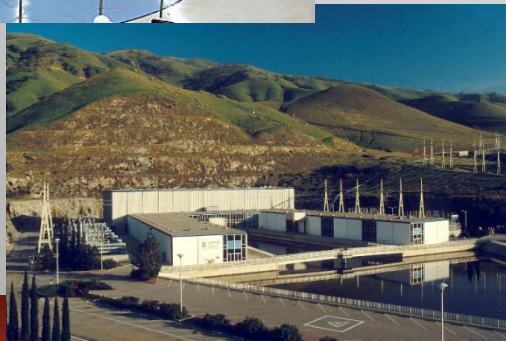


Water, Energy, and Climate Change



MITIGATION

*Manage water
in a way that reduces
emissions of greenhouse
gases (mostly CO₂)*



Statewide Strategies

- ❖ Greater flexibility in meeting competing objectives
- ❖ Flood management that accounts for higher variability, Central Valley Flood Protection Plan to address climate change impacts
- ❖ Emphasize environmental stewardship
- ❖ Practice and promote integrated flood management
- ❖ Enhance and sustain ecosystems
- ❖ Advance and expand conjunctive management of surface and groundwater resources
- ❖ Achieve a sustainable Delta



CWP 2013

Climate Change

4 Approaches

CWP 2013

Climate Change

1. Regional Reports

- Climate Change Specialists in each region
- Regionally-appropriate Adaptation Strategies
- Scientifically sound approach to address CC

CWP 2013

Climate Change

1. Regional Reports

- Climate Change Specialists in each region
- Regionally-appropriate Adaptation Strategies
- Scientifically sound approach to address CC

2. Future SCENARIOS

- Thru Statewide Water Analysis Network

CWP 2013

Climate Change

3. Within all Resource Management Strategies

- Climate Change Adaptation
- Greenhouse Gas Mitigation

CWP 2013

Climate Change

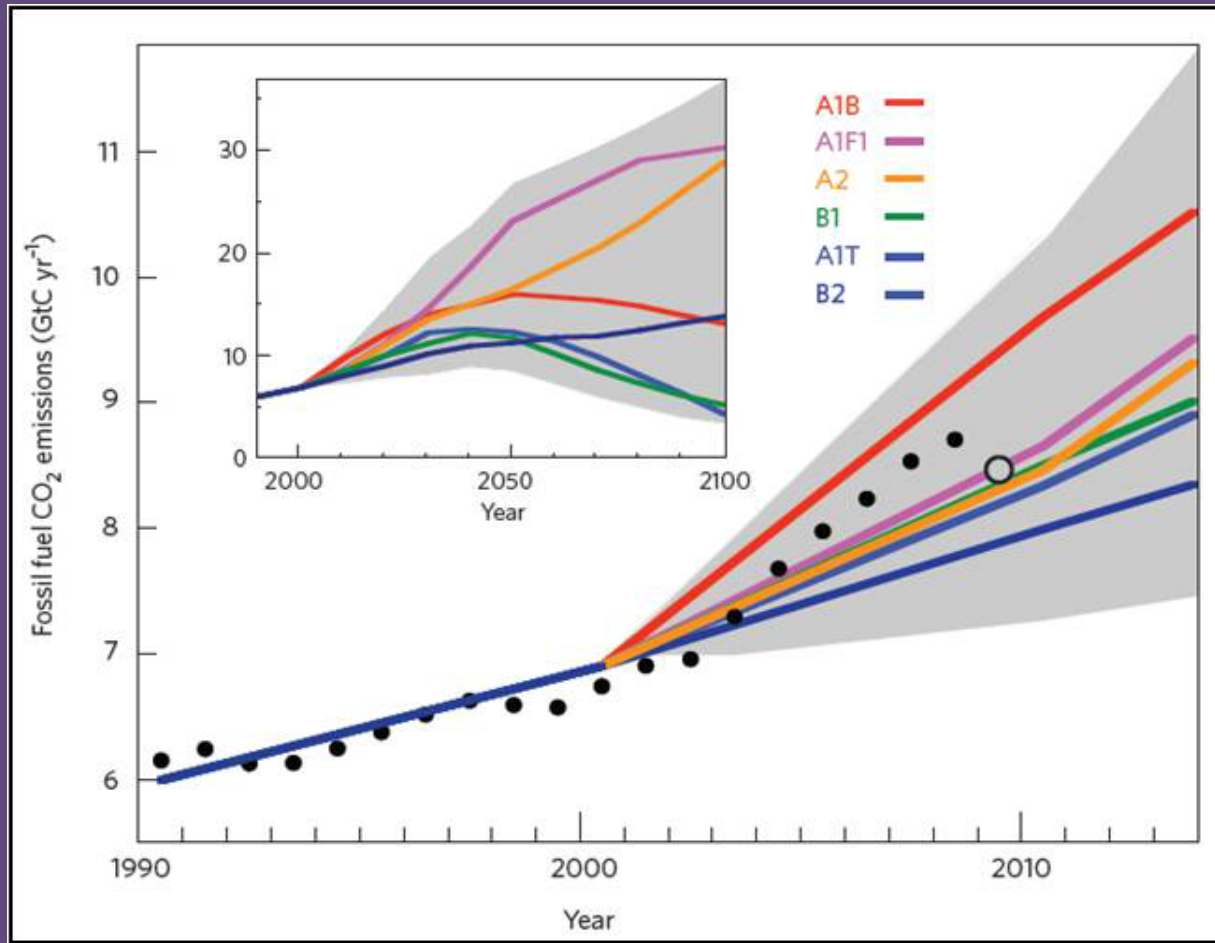
3. Within all Resource Management Strategies

- Climate Change Adaptation
- Greenhouse Gas Mitigation

4. Statewide Strategies

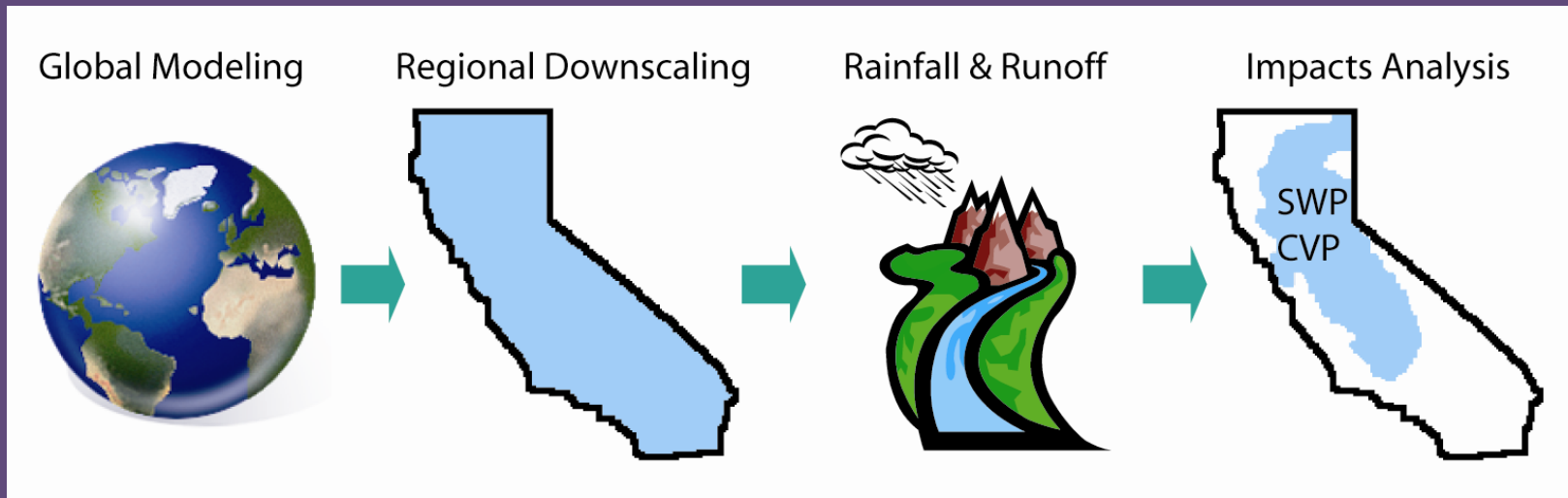
- Highlights and Key Recommendations

SCENARIOS

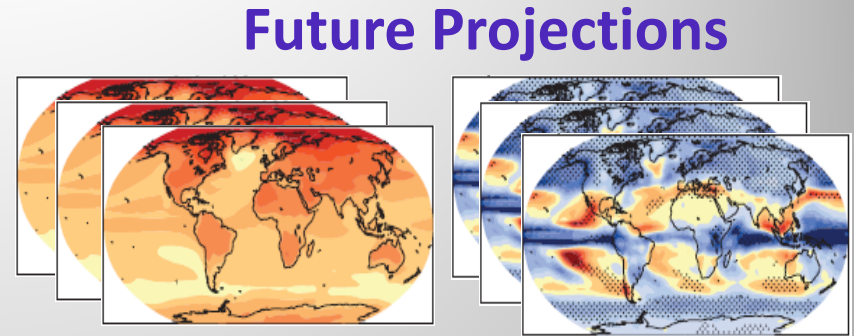


Colored lines – greenhouse gas emissions scenarios
Black dots – actual greenhouse gas emissions

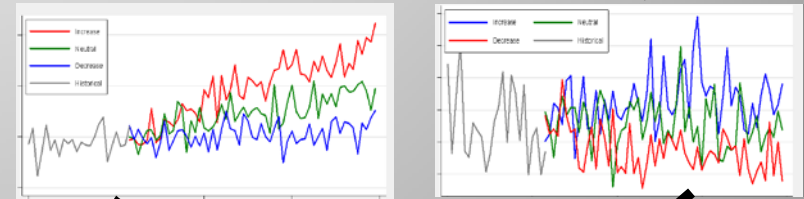
SCENARIOS



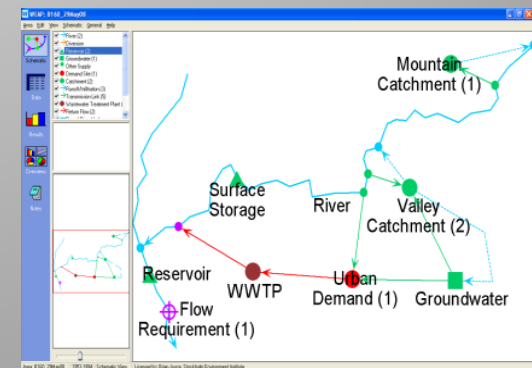
- GLOBAL CIRCULATION MODELS
 - 6 Future Climate Scenarios
 - 2 Emissions Scenarios



Local Weather



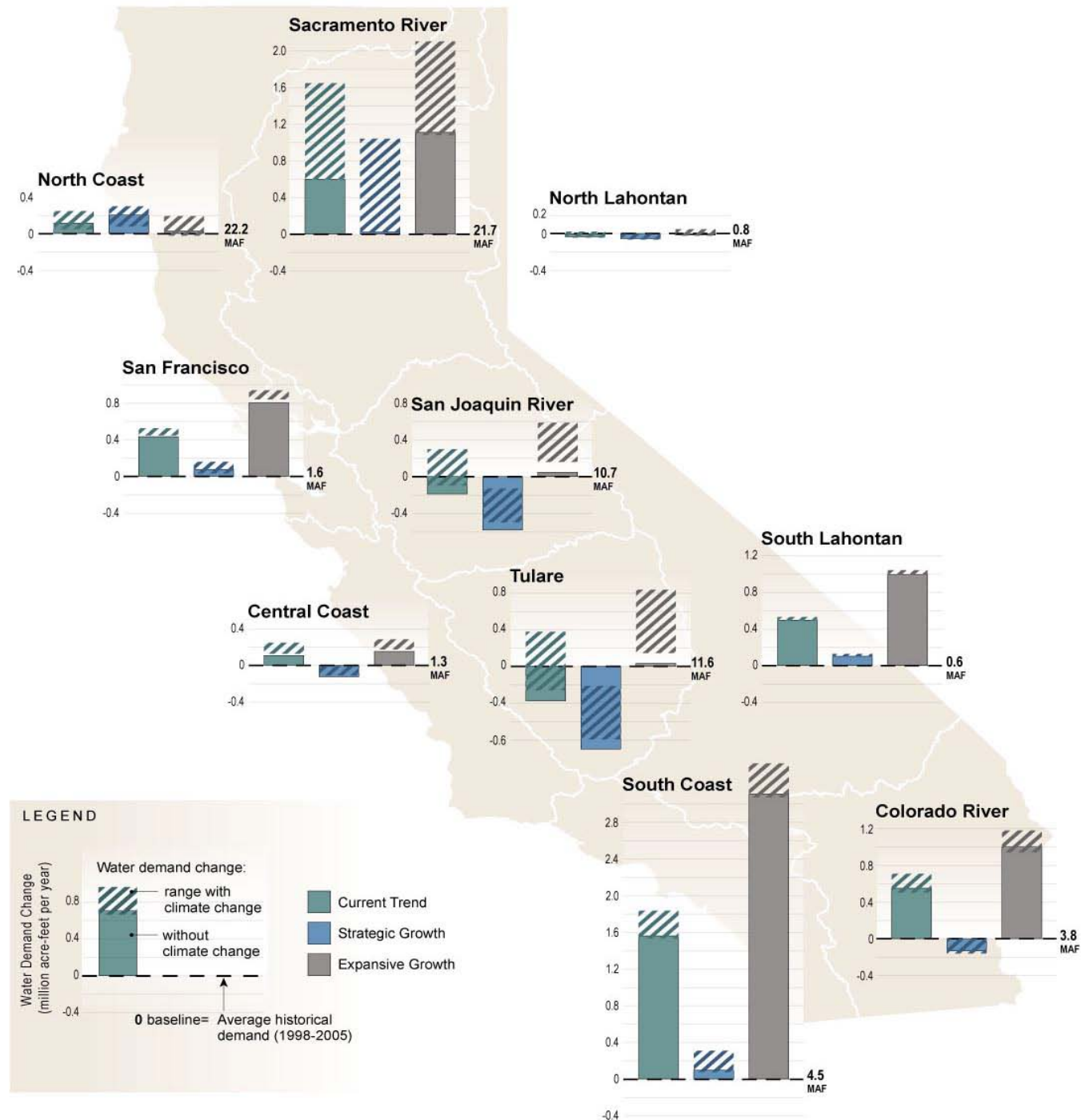
Hydrology



- DOWNSCALING
- HYDROLOGIC MODELS
 - irrigation demand
 - hydrologic flows

* Using the World Climate Research Programme's (WCRP's) Coupled Model Intercomparison Project phase 3 (CMIP3) multi-model dataset

Update 2009 Regional Water Demand Changes By Scenario



Companion Plans/ Work

- Sea Level Rise Study

National Research Council, 2012

Companion Plans/ Work

- Sea Level Rise Study

National Research Council, 2012

- CCTAG –Climate Change Technical Advisory Group

11 panel members; expertise areas

First meeting of CCTAG for Q1, 2012

Companion Plans/ Work

- Sea Level Rise Study

National Research Council, 2012

- CCTAG –Climate Change Technical Advisory Group

11 panel members; expertise areas

First meeting of CCTAG for Q1, 2012

- Internal DWR Framework for Climate Change

Analysis Methods for DWR Planning Studies

Companion Plans/ Work

• IRWM Handbook

Guidance for IRWM groups

Will be Released November, 2011

<http://www.water.ca.gov/climatechange/>



RESOURCES LEGACY FUND



Future Steps



How can you stay
involved?

CLIMATE CHANGE

In the California Water Plan Update 2013

- Subject Expertise Coordination
 - Full time DWR Climate Change Staff
 - CCTAG – Climate Change Technical Advisory Group
 - SWAN Statewide Water Analysis Network – Scenarios
 - Regional Reports
 - Resource Management Strategies

Final Climate Quiz!

What percent of the most frequently published climate scientists concur that human activities are the main cause of modern global warming?

- A. 25%
- B. 50%
- C. 75%
- D. 97%

Final Climate Quiz!

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